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## **Private and Public Economic Perspectives on Animal Disease: An Emerging Strategic Issue for Agribusiness Managers**

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### **Summary**

The feature provides a convincing case for the importance of invasive species to the livestock and allied industries, while conceding that the economic research to model and measure the benefits of exclusion or eradication is still relatively underdeveloped. A progressive livestock manager realizes that his business must consider potential responses by individual people and firms (producers, consumers, businesses), as well as broader impacts within their supply chains and industries, when considering the potential threats (or opportunities) from an animal disease outbreak. To be an active voice in the formation of animal disease management and control policies that may influence the livestock sector, industry leaders may also need to understand the public policy perspectives on regional, national and international levels.

As a set, the articles provide a balanced overview of private and public research, in addition to motivating a stronger connection between social and managerial economics. Previous analyses of animal disease impacts, policies and management range from producer level to national welfare impacts. Yet, after a major disease and market event, stakeholders seek a single economic measure of loss, all-inclusive of impacts. These articles demonstrate the need to clearly frame the research question surrounding potential economic implications of animal disease, as the approach and assumptions made about “what counts” may significantly influence the perceived cost and benefit trade-offs of public policy decisions.

### **Livestock Production**

Animal diseases economic impacts can be divided into six areas: production effects, market and price effects, trade effects, impacts on food security and

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nutrition, human health and the environment, and financial costs (Food and Agricultural Organization, 2001). Because the disease shock most often originates at the production phase, it receives the most direct attention in impact studies. Yet, more far-reaching factors are sometimes overlooked.

Disease impacts are generally easy to identify but may be difficult to quantify. In livestock, for example, delays in reproduction result in fewer offspring, which has long term effects not easily measured in the present. Even though disease can be managed optimally by private producers when the perceived economic damage is high, some level of disease is often accepted by managers when control is sufficiently costly. Still, Wolf concludes that producer incentives for disease management can be changed through new technologies that lower the cost of prevention of control, subsidies or cost sharing of control measures, or on the consumer side, a change in public desire for disease risk-free products that changes relative prices.

In short, livestock industry leaders would agree that disease outbreaks often have broader, long-term multiplier effects that extend beyond principal markets. Understanding the extent of such effects is an important element in measuring potential costs and benefits of public policy tools to manage animal disease.

### **Agribusiness Chain Linkages**

Inclusion of the vertical linkages from consumer to producer is important in identifying the transmission of shock along the marketing chain. For example, recognition of intra-industry trade is vital to determining the true impact of a livestock disease outbreak since not all meat sectors or firms may be similarly affected as the industry continues to develop more branded products. Along these lines consumer reactions to livestock diseases are critical to accurately measure not just in terms of decline in consumption, but also in terms of consumer confidence (currently tracked by the National Cattlemen), changes in place of purchase (food away from home vs. supermarkets vs. direct purchases from producers) and changing interest in branded products. Capturing intra-industry trade is facilitated by modeling meats as differentiated products, but this is a fairly young field of research, and the work that has been done focuses little on disease impacts (although food safety approaches may be applicable).

As with most major market shocks, market structure plays an important dimension in determining the distribution of losses associated with an animal disease outbreak. Integrating measures of market power into consumer demand analysis, factor demand, market integration and supply chain models could help the industry assess the role that market structure plays in the industry wide impacts of animal disease. An interesting question that Paarlberg, et al. pose is whether the traceability and product certification costs of new regulations will increase the pace of agribusiness consolidation, or vice versa. This again motivates the need to capture the vertical and horizontal linkages in supply chains when conducting economic analyses.

Pritchett, et al. present a concise typology that not only organizes how one thinks about the types of research being conducted on animal disease economics, but also illustrates the linkages and complexity inherent in this private market force and public policy issue.

## **Guiding Policy with Economic Impact Analyses**

Since all public policies are to be analyzed with a cost-benefit framework, calculating the economic impacts of an animal disease outbreak is critical for determining national policy on trade rules, which control strategy to adopt, how aggressively to intervene, and compensation payments. But assumptions by economists about how to include shock magnitudes, commodity coverage, and how trade is modeled affect the results, thereby introducing potential bias. So, industry leaders that hope to play a role in the policy formation process should be cognizant of the approaches used to value private and social costs and benefits.

*Important lessons one can glean from Paarlberg, et al. and Sumner, et al. are:*

1. Modeling meat trade as net trade is not satisfactory and produces erroneous results. Meat imports and exports must be treated as distinct measures and include consideration of the structure of import policies
2. While the public and policymakers are most comfortable using changes in revenue and expenditure as impacts, economists do not interpret changes in revenue and expenditure as welfare measures.
3. In terms of trade, it may benefit a country that has eradicated a disease to contribute to the eradication costs for neighbors, especially if exports are a large share of their industry's market.
4. Trade embargoes that result from following current WTO rules may lead to a situation where the costs incurred by the country trying to accommodate the consequences of the embargo are well beyond the social optimum, but this is not recognized without solid economic analyses.

## **The Interface of Public Policy and Private Incentives**

Economists often note an active role for government in markets for goods or services that unaided market forces would fail to provide to a sufficient degree. When there are public good aspects to a program (non-rivalry in consumption and impractical to exclude benefits from those who do not pay), it becomes difficult for the livestock industry to profitably provide the good (or service). Successful eradication campaigns of highly contagious animal diseases call for a combined private and public effort. Complete eradication requires universal compliance, which can only be secured if private agents perceive benefits (including the absence of sanction) from cooperation. Contagious diseases must be treated from a regional perspective. Sumner, et al. show that, in the case of

industry collective goods, product or animal unit check-off programs or assessments are a natural funding mechanism. But, a disease that affects wildlife or pets as well as commercial livestock, or that has other widespread benefits, such as military security or public health, are more natural candidates for general public funding.

There are generally quick responses to any perceived animal disease threat, due to political pressure to address food and health security. Nonetheless, there is generally little public analysis of whether these responses are cost effective. And, the structure of policies and programs may be influenced by not only the numbers derived by the analyses, but also due to consideration of some of the indirect implications that may arise from well-developed models.

In summary, Sumner, et al. effectively argue that fuller recognition of the nature of some of the public good characteristics of exotic diseases services may allow better response to the concern over funding of animal disease management programs, even within governmental agencies. The design of better public policy may also lead to enhanced industry participation in operating and funding programs.

The challenge to agribusiness leaders is to motivate the need for more research on the potential managerial implications of animal disease threats, better frame the research that guides public institutions and influences policy development, and thus, illustrate why more managers should take an active interest in the interpretation of research findings by regulatory and policymaking bodies.